

APPENDIX 2: Memo by Carey Terasaki, Airworthiness Law Branch, FAA

Below is a copy of a memo from Carey Terasaki, Manager, Airworthiness Law Branch, FAA, to Fred Sobeck, Flight Standards Service, FAA, dated March 13, 2000. The document expresses FAA Chief Counsel's response to questions and concerns raised by the Major/Minor Working Group during the February, 2000 meeting session.

MAR 13 2000

To: Fred S.**From: Carey T.****BACKGROUND****The working group had asked---**

1. Why only the definition of *major repair* refers to "if improperly done?"
2. Why the definition of *major alteration* does not refer to "if improperly done?"
3. How does one interpret the *major repair* definition?

AGC-210 had previously advised---

Excluding the phrase "if improperly done" in the definition of *major repair* would render a literal reading of that definition senseless. Including "if improperly done" in the definition of *major alteration* would broaden that definition such that all alterations would be "major."

The plain meaning of "repair" connotes a restoration; that is, when one repairs something, one restores its qualities. In the context of an "alteration," a change from the existing design is a given. A repair to a product can result in an alteration when the repair only restores part of the product to its undamaged state. It can also "result" in an alteration when the extensiveness of the damage is such that the measures to restore the product will necessarily entail additional or different design elements.

Each definition refers to qualities normally thought of as needing "repair" or restoration (e.g., structural strength), and qualities normally associated with design choices that can be "altered" (e.g., weight and balance). In each case, the FAA is concerned when the maintenance action might appreciably affect any of the qualities affecting airworthiness. In this regard, the *major repair* and *major alteration* definitions work in concert. If the failure to restore the product, or the extent of the change due to the restoration measures, might have an appreciable effect on the qualities affecting airworthiness, the maintenance action is "major," whether one calls it a "repair" or an "alteration."

AGC-210 described a logical construction of "major repair" using the example of the "appropriate" torque range for a bolt pattern as an illustration. I.e., there is a range of torque values within which there clearly would be no appreciable effect on that joint, much less an appreciable effect on any of the qualities affecting airworthiness of the product. (The joint would carry the necessary loads, no stress risers would be created, etc.) If the bolts were torqued outside that range—"improperly done"—and returning the product to service with that joint might appreciably affect the airworthiness of the product, the repair is "major." Conversely, if

Where the complexity of the repair will significantly affect, weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or

That is not done according to accepted practices or cannot be done by elementary operations.

Major alteration means an alteration not listed in the aircraft, aircraft engine, or propeller specifications that:

Significantly affects weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or

Is not done according to accepted practices or cannot be done by elementary operations.

III. Also, the regulatory approach could include various levels of requirements, depending on the aspect(s) of concern, e.g., recordkeeping, data approval, or "second set of eyes."

However, the group also developed some concepts that are unworkable, e.g.,---

Using a "replacement" definition to exclude some actions from being "major." That definition was based on using parts identical to those already approved as part of the type design. The problem is that the concept ignores the fact that novel or unique methods, techniques, or practices for accomplishing the replacement can have significant impacts on the qualities affecting airworthiness; there appears to be no safety rationale for the FAA to ignore those kinds of major repairs. Also, the concept suffered from the logical inconsistency of excluding some (literal) replacements from the term, depending on whether the item being replaced was damaged or not. (A more limited approach may be possible. The working group could consider the perspective that some alterations that are done 100% in accordance with already approved data are considered to be "listed in the aircraft, aircraft engine, or propeller specifications" and are, thus, not considered to be major alterations. Skip Averman has a ccMail on this.)

"Requiring" a determination of "major" or "minor." Although one needs to address the issue as a matter of attempting to comply with the pertinent regulations, FAA does not want to identify an action as a "requirement" unless the failure to do so would be considered a violation of law (punishable by civil penalty or certificate action) or a legal barrier to an entitlement (which would implicate some return-to-service paperwork or other rules). The working group is free to recommend those. However, AGC-210 does not see the need to add that layer of bureaucracy.

Incorporating "who 'does' the necessary determination?" into the definitions. Regulated persons engage in much decision-making as they attempt to comply with the vast array of FAA regulations. This does not mean, however, that those persons have been delegated the legal authority to interpret FAA regulations; that function is, as a matter of law, non-delegable. The

returning the product to service with that joint would not have any of those appreciable effects, the repair is "minor."

The working group stated that a common opinion is that the determination of the effect of "if improperly done" is obviated if compliance with § 43.13(b) is assured. AGC-210 explained how that common opinion is incorrect.¹³

In retrospect, it has become clear that the group, when originally tasked, set an unrealistic goal, i.e., that one could devise major repair and alteration definitions that could be more literally enforced, but not have a significantly disruptive impact on the repair industry.

A POSSIBLE APPROACH

The working group already has developed an approach that attempts to (1) use revised definitions in 14 CFR § 1.1 to trigger the *major repair/alteration* requirements; (2) use a revised part 43 appendix as examples that generally will presumed to be "major"; and (3) provide that a repair listed in the appendix is, nonetheless, "minor," based on the specific aspects of that repair. This appears to be a good approach. Two important things to consider---

I. Developing the way for determining that a specific repair or alteration is minor must be based on applying the § 1.1 definitions.

II. In reviewing the possible revisions to the § 1.1 definition of *major repair*, AGC-210 and the FAA rep had discussed the possibility that some form of "if improperly done" needed to be retained, or that concept needed to be replaced. E.g., one could draft a *major repair* definition as follows---

Major repair means a repair:

Where the damage to be repaired has significantly affected weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness.

¹ The major repair regulations are distinct from § 43.13(b) and are cited differently.

² One can comply with § 43.13(b), and still violate the applicable major repair regulation. Using the bolt torque example, the major repair regulations would require that the product be returned to service only if the bolts were torqued within the range of values approved by the FAA. But § 43.13(b) would require that the product be returned to service only if the bolts were torqued within the range of values within which the product would be at least equal to its original or properly altered condition in terms of the qualities affecting airworthiness. (I.e., § 43.13(b) would be satisfied if the joint would carry the loads as well as the original, the joint would be as durable as the original, etc.)

³ It would be nonsensical for the FAA to create a regulatory scheme where the requirement to keep a record of a repair would be triggered only if the maintenance person returned the product to service in violation of § 43.13(b). That person returns the product to service based on the belief that the maintenance was properly performed. Why would an operator record something that it believes to be untrue, and operate an aircraft it believes to have been maintained improperly?

working group had developed a proposal whereby a determination of "minor" would be defined as the "proper" result of an approved person following the FAA-developed process. That in and of itself would create a tautology—a repair is minor if it is correctly determined to be minor and it is major if it is incorrectly determined to be minor. The same repair for the same aircraft should be classified the same, regardless of status of the person attempting to "classify" the repair.⁴ Thus, the process for "determining major" should be "de-personalized" and left to the AC as a means of compliance.

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⁴ This is not to imply that subjective regulations cannot, as a matter of fact, be "interpreted" differently. It is to state that, as a matter of law, the government should try to eliminate those inequities, rather than codify them.